

# SEAT WITH ADJUSTABLE HEAD REST

## DESCRIPTION

### BACKGROUND OF THE INVENTION

[Para 1] 1. The field of the invention

[Para 2] The present invention relates to a seat with adjustable head rest, and more particularly to a seat with adjustable head rest suitable for car comprising a head rest portion, a supporting portion positioned within the head rest portion, at least two connecting portions and a securing element securing the supporting portion with the connecting portions, wherein a plurality of positioning holes allow adjustment of a distance between two supporting bars to fit seats of various specifications. Thus, the manufacturing cost can be effectively reduced and the inventory control of the seats and parts thereof can be effectively promoted. Furthermore, the transportation and warehousing cost can also be effectively reduced by reducing the size of the finished product.

[Para 3] 2. Description of related art

[Para 4] The development of automobiles started with invention of wheels, and the usage of wheels is no doubt the beginning of the revolution of the land transportation. One of the most important inventions, wheels, brought cars into the mankind's life and paving a way to a larger modern society. Accordingly, cars provide great convenience for transportation making communication and many activities easy. The earliest wheel was actually made from wooden bars, which was applied for transporting heavy objects. Around 2000 BC, wheels with spokes, which were substantially lighter than the prior wooden wheels were invented for manufacturing lighter transportation vehicles. Presently, vehicles have become essential transportation tools in our daily activities.

**[Para 5]** Regardless of the type of automobiles, seats are equipped with head rest for making the users feel more comfortable. Referring to Fig. 4, an elevational view of the conventional car seat is shown. The conventional seat A has a head rest B having a supporting appliance C positioned there-within, wherein the supporting appliance C comprises a supporting element C1 and a plurality of welded supporting bars C2. The supporting bars C2 protrude out of the head rest B and are positioned in a plurality of positioning holes A1 of the seat A. Thus, the body of the user can be rested against the seat A and the head can be rested on the head rest B.

**[Para 6]** However, the specification of the head rest B is various and the distance between the positioning holes A1 of the seat A are different for different specification. Accordingly, the supporting bars C2 must be manufactured in a manner to correspond to the distance between the positioning holes A1 of the seat A, which are different for seats with different specification. Thus, not only the manufacturing process is complex but also the manufacturing cost is substantially increased. For stocking the head rests and seats of various specifications, a substantially larger warehouse is required and the inventory control thereof can also be substantially expensive. Furthermore, the specification of the head rest is a critical issue for a user who consider replacing the head rest. Fig. 5 shows an elevational view of another conventional head rest, wherein the head rest comprises a head rest a having a main body b. The main body b has a clamping plate b1 positioned in front and two positioning bars b2 positioned in between the main body b and the clamping plate b1. The positioning bar b2 has an adjustable block b3 having the screw b31 for tightening the adjustable block b3 onto the positioning bar b2. The bottom portion of the adjustable block b3 is jointed to an adjustable bar b4. Thus, the screw b31 can be adapted for adjusting a distance between the adjustable block b3 and the adjustable bar b4 in order to suit seats of various specifications.

**[Para 7]** Even though the conventional head rest a can be adjusted for suiting seats of various specifications and thereby resolving the problem of different distance between the two adjustable bars b4 described above, the

assembly parts are too many and thus requires many special molds and molding steps for manufacturing the same. Thus, the manufacturing cost is substantially increased. Besides, vibrations due to the operation of the automobile could make the screw b31 come loose after a duration of usage and therefore it is difficult to secure clamping of the adjustable block b3 with the positioning bar b2 by using the screw b31 and thereby loosen the head rest a. Thus, user may need to periodically check and secure the screw b31 to ensure the head rest a is properly secured in order to make self-comfortable.

[Para 8] Therefore, to improve the defects described above depiction is an important issue for the manufacturers in the field.

## SUMMARY OF THE INVENTION

[Para 9] Accordingly, in the view of the foregoing, the present inventor makes a detailed study of related art to evaluate and consider, and uses years of accumulated experience in this field, and through several experiments to create a seat with adjustable head rest. The present invention provides an innovated attractive seat with adjustable head rest capable of fitting seat with various specifications, and reducing the manufacturing cost and effectively promoting the inventory control of the seats and parts thereof.

[Para 10] According to an embodiment of the present invention, a supporting portion positioned within a head rest portion comprises a plurality of positioning holes, wherein a distance between two supporting bars can be adjusted by selectively fitting the supporting bars to the positioning holes. Thus, the head rest portion can be suitable for seats of various specifications. Thus, the manufacturing cost can be effectively reduced and the inventory control of the seats and parts thereof can be effectively promoted. Furthermore, the transportation and warehousing cost can also be effectively reduced by reducing the size of the finished product.

[Para 11] According to another aspect of the present invention, the positioning holes can be directly formed in the positioning panel, and

therefore no extra equipment for positioning the adjusting blocks is required, and therefore the manufacturing cost can be effectively reduced.

[Para 12] According to another aspect of the present invention, because the plate is attached to the whole side surface of the positioning panel, the structure of the supporting portion can be reinforced.

## BRIEF DESCRIPTION OF THE DRAWING

[Para 13] For a more complete understanding of the present invention, reference will now be made to the following detailed description of preferred embodiments taken in conjunction with the following accompanying drawings.

[Para 14] Fig. 1 is an exploded view of a seat with adjustable head rest according to an embodiment of the present invention.

[Para 15] Fig. 2 is an elevational view of a seat with adjustable head rest while in use according to an embodiment of the present invention.

[Para 16] Fig. 3 is an exploded view of a seat with adjustable head rest according to another embodiment of the present invention.

[Para 17] Fig. 4 is an elevational view of a conventional head rest.

[Para 18] Fig. 5 is an elevational view of another conventional head rest.

## DETAILED DESCRIPTION OF EMBODIMENTS

[Para 19] Reference will be made in detail to the preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers are used in the drawings and the description to refer to the same or like parts.

[Para 20] Referring to Fig. 1, an exploded view of a seat with adjustable head rest according to an embodiment of the present invention is shown. The seat with adjustable head rest, according to an embodiment of the present invention, comprises a head rest portion 1, a supporting portion 2 and at least two connecting portions 3.

[Para 21] The head rest portion 1 comprises a case 11 stuffed with a resilient element 12 comprised of a foam rubber or a sponge material.

[Para 22] The supporting portion 2 comprises a positioning panel 21 having a groove 211 at a bottom thereof and a plurality of positioning holes 212 penetrating through the positioning panel 21. Furthermore, the positioning panel 21 comprises a plate 22 positioned at a side thereof.

[Para 23] Each of the connecting portions 3 comprises an adjusting block 31 having a through hole 311 and a supporting bar 32 located below the adjusting block 31.

[Para 24] The assembly of the seat with adjustable head rest, according to an embodiment of the present invention, will be described in detail with reference to Figs. 1 and 2 as follows. First, the adjusting block 31 of each connecting portion 3 is positioned within the groove 211 of the positioning panel 21 respectively and then a securing element 4 is passed through the through hole 311 and secured into the positioning hole 212 respectively, thus the connecting portions 3 are secured within the groove 211 of the supporting portion 2. The plurality of positioning holes 212 that are arranged in a row allow the adjustment of a distance between the two supporting bars 32 by selectively fitting the two supporting bars 32 with the appropriate positioning holes 212. Next, the assembled supporting portion 2 and the connecting portions 3 are fixed into the case 11, wherein free end portions of the supporting bars 32 protrude out of the case 11 for connecting to a seat 5. Thus, the assembly of the seat with adjustable head rest of the present invention is completed.

[Para 25] Furthermore, the positioning panel 21 and the plate 22 of the supporting portion 2 can be produced by using an extrusion process and thus the manufacturing cost can be effectively reduced.

[Para 26] According to an embodiment of the present invention, the securing element 4 can be adapted for securing connecting portions 3 with the positioning panel 21, and the plurality of positioning holes 212 allows the adjustment of a distance between the two supporting bars 32 positioned below the adjusting block 31 by selectively fitting the two supporting bars 32

with the appropriate positioning holes 212 using the securing element 4. Next, the supporting bars 32 are fit into a positioning groove 51 of the seat 5 and positioned over the seat 5.

[Para 27] Referring to Fig. 3, an exploded view of a seat with adjustable head rest according to another embodiment of the present invention is shown. As shown, one side of the plate 22 has an arch shape in order to reinforce the plate 22 so that deformation thereof can be effectively reduced.

[Para 28] Accordingly, the seat with adjustable head rest, according to an embodiment of the present invention, has the following advantages.

[Para 29] The positioning panel 21 comprising the groove 211 is adapted for position the adjusting blocks 31 of the connecting portion 3 and the adjusting blocks 31 are secured with the positioning holes 212 within the groove 211 by using the securing element 4. Furthermore, the plurality of positioning holes 212 allows adjustment of a distance between the two supporting bars 32 positioned below the adjusting blocks 31 and therefore suitable to fit seats of various specifications. Thus, the manufacturing cost can be effectively reduced and the inventory control of the seats and parts thereof can be effectively promoted. Because the securing element 4 can be passed through the through hole 311 and is secured within the groove 211, therefore the supporting portion 2 and the connecting portion 3 would not easily come loose due to vibration. Furthermore, the connecting portion 3 of the adjustable head rest can be removed and packed independently, and therefore the transportation and storage cost can be effectively reduced.

[Para 30] The positioning holes 212 can be directly formed in the positioning panel 21, and therefore the molding cost can be effectively reduced as this does not require any extra equipment for positioning the adjusting block 31. Because the positioning panel 21 is directly jointed to the plate 22, deformation of the supporting portion 2 can be effectively reduced.

[Para 31] While the invention has been described in conjunction with a specific best mode, it is to be understood that many alternatives, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, it is intended to embrace all such

alternatives, modifications, and variations in which fall within the spirit and scope of the included claims. All matters set forth herein or shown in the accompanying drawings are to be interpreted in an illustrative and non-limiting sense.